with concave gratings. He first tried a grating of 12 feet focal length, and the results were not as good as he thought they should be, so he then constructed a grating of 21 feet focal length, and the results he would be able to submit to the Section in his photographs. Having made the negatives, the next thing was to place the scale upon them. He first tried Ångström's numbers, but they would not match. He had therefore to determine the relative wave-lengths, and this he did by using overlapping spectra and micrometer measurements. As the spectrum was normal, all that was necessary was to get the scale to agree at two points of the photograph, and then it would agree at all. He had found it necessary to adopt a new scale. He was now engaged in making measurements in the red end of the spectrum in order to complete his work. This he is doing by the eye, and not by photography, as in this part of the spectrum photographs do not show so much as the eye. In laying the maps before the Section Prof. Rowland said that it would be seen how crowded the lines were in the ultra-violet region. He believed that on this account it would be almost impossible to determine the metals to which they belonged.

Capt. Abney thought it a serious thing to change the standard of wave-length, and suggested that a Committee of the Association should be appointed to confer with an American Committee on the subject.

Prof. Rowland said that Ångström's numbers do not agree among themselves, and therefore he could not fit a scale to his map in any way until he had made a new determination.

Prof. Young, of America, agreed with Prof. Rowland in thinking that Ångström's numbers were not consistent.

Mr. R. T. Glazebrook, F.R.S., exhibited negatives of photographs of the solar spectroscope taken by Mr. G. Higgs. The spectroscope was one constructed by Mr. Higgs himself. Twenty-one lines can be counted on the negatives between H_1 and H_2. There is a length of about 4 inches between G and H, and from 900 to 1000 lines can be counted between them.

Recent Determinations of Absolute Wave-length, by Mr. L. Bell, of Baltimore.—Some two or three years before Ångström's death he became aware that there was an error in the standard metre used in his researches. Nothing in the way of correction was done, however, until some three years ago, when Thalèn obtained a more accurate value for the metre and applied the appropriate correction to Ångström's wave-lengths. This amounted to 1 part in 8500.

Some few years ago a very careful determination was made by Mr. C. S. Pierce, and it was with the view of confirming or correcting his result that the writer began work. Pierce had found an absolute value corresponding to the wave-length 5896·26 for the less refrangible of the D lines, as the mean result from four gratings. The writer using two of Prof. Rowland's glass gratings, obtained for the same quantity respectively 5893·95 and 5896·11. The outstanding error must be ascribed to faults in the gratings. Nearly all gratings are afflicted with variations in the distance between the lines in various portions of the ruling. If the irregularity is extensive, the grating is likely to show false lines and give bad definition.

If, however, the abnormal spacing—however great—is confined to a few hundred lines, this portion, having little defining power, takes no part in the formation of the spectra actually seen, but simply scatters light, and of course introduces an error in the average of grating-space obtained by measuring the whole ruled surface.

The gratings used by the writer were therefore calibrated, and corrections calculated and applied to the above wave-lengths, reducing them to 5896·04 and 5896·09. The mean value taken was 5896·08.

On subjecting Pierce's gratings to a like examination, values nearly coincident with the above were obtained. During the present summer an admirable thesis by Dr. Kurlbaum has appeared giving results quite close to the writer's—about 5895·93 for the mean of two gratings, uncorrected, however, for errors of ruling.

We can, from the close agreement of the results obtained by Kurlbaum, Pierce (corrected), and the writer, feel sure that the wave-length of D is very near to 5896·00, and consequently all wave-lengths based on Angstrom's value are incorrect by at least one part in 8000. But this would not be a very serious matter if Ångström's relative wave-lengths were exact, which they are not.

On the Existence of Reflection when the Relative Refractive Index is Unity, by Lord Rayleigh, Sec.R.S.—He wished to find whether there was any reflection from a plate of glass immersed in a liquid of the same refractive index as the glass. The liquid used was a mixture of carbon bisulphide and benzole, and it was contained in a hollow prism. The glass plate was roughened behind to get rid of the second surface of reflection, and was mounted in the prism.

It was found that when the index was the same there was nothing like abolition of the reflection. The flame of a candle could be seen distinctly reflected in the glass. The phenomenon may be better followed by mounting the glass in such a way that it is possible to pass from a grazing to a perpendicular incidence. The ray for which the refractive index is made the same being chosen about the middle of the spectrum, as you alter the obliquity of the light, total reflection occurs for either end of the spectrum, and a dark band occupies the middle region. No doubt this band appears dark by contrast. In this way one could be certain that the index had really been equalized.

He next tried freshly-polished glass, and the reflection from it was not more than one-fourth of that from old glass, although the latter had been carefully cleaned. Still even from the polished glass the reflection was very copious. It did not need any care of adjustment in order to get the reflection of the candle-flame. The light so reflected was not coloured. There was a moderate reflection of all kinds. He confirmed this by using sunlight.

Where dispersion exists there is no reason to suppose that reflection should cease merely because the refractive index is equalized. If recently-fractured glass should give the same result, one might safely conclude that there was no residual film in play, and there would then be no doubt of the inaccuracy of Fresnel's law.

On the Action of an Electric Current in hastening the Formation of Lagging Compounds, by Dr. Gladstone, F.R.S.—The influence of the current was tried on various solutions from which, under normal conditions, precipitation takes place only slowly. A mixture of tartaric acid and potassium nitrate, a mixture of potassium oxalate and magnesium sulphate, a mixture of calcium sulphate and strontium nitrate, and some other mixtures were used. It was demonstrated that the current does hasten the action.

NOTES.

THE International Hygienic Congress at Vienna (attended by no fewer than 2250 members) was opened on Monday by the Austrian Crown Prince, who in a brief address referred to the vast importance of hygiene. After the Crown Prince's speech, which was much applauded, Prof. Grüber, the Hon. Secretary, read a report on the organization of the Congress. Two addresses were delivered by M. Brouardel and Herr Pettenkofer, the former of whom spoke on *typhus abdominalis*, the latter on hygienic instruction in Universities and technical schools. M. Brouardel said that the disease of which he spoke is far more dangerous to man than cholera, and that it is still an open question whether it owes its origin to the decomposition of organic matter or whether there is a specific virus. He maintained that in 80 cases out of 100 typhoid fever is caused by polluted water, and that the question of water supply must always take a foremost rank in hygienic administration. Herr Pettenkofer lectured on hygienic instruction in Universities and technical schools, and dwelt on the necessity of spreading hygienic principles among all classes of society. He largely quoted English authorities, and, in alluding to the English proverb "Cleanliness is next to godliness," remarked that the statistics of the mortality of London show how hygienic piety has been rewarded by the heavens. In the course of his address he dealt with the question of quarantine arrangements. He denied that the English are responsible for cholera coming to Europe through the Suez Canal. "This opinion," he said, "is clearly refuted by the fact that we were frequently visited by the disease before the Suez Canal was opened, and that since that time the epidemic has appeared in many European countries, while Great Britain, which now stands accused, and has suffered much through cholera in former times, remains free from it. Why do the English, in spite of their enormous traffic with India, where the cholera is never extinct, not transfer the disease to their own country? On looking more closely into the matter it must be admitted that England's immunity from cholera since 1866 is not caused by quarantines and other expensive obstructions to international traffic, and it is to be hoped that Italy, France, and Spain, as well as Russia, Germany, and Austria-Hungary, will follow England's example." The business of the Sections began on Tuesday. In the First Section, Mr. E. Frankland, who spoke in German, reported on the present state in England of the purification of sewage, with special reference to the prevention of river pollution, and on the legislation connected therewith. In the Second Section the necessity of placing schools under medical supervision was discussed, especially with reference to the prevention of the spread of infectious diseases and shortsightedness. The influence of drinking-water in the production and spread of epidemic disease was fully discussed in the Third Section. In the Fourth Section, Dr. Strulens, of Belgium, read a paper on phosphor necrosis of the jaws, and M. Violi, of Constantinople, a paper on vaccination and anti-vaccination. In the Demographical Section, M. Bertillon, of Paris, discussed the papers sent in by Dr. Grimshaw, of Dublin, and Prof. Koeroesi, of Buda Pesth, on the methods of drawing up census returns. There was an animated discussion, which was brought to a close by a resolution accepting the regulations of the International Statistical Institute. On Tuesday it was decided that the next meeting of the Congress should be held in London in 1889.

AT the meeting, in Toulouse, of the French Association for the Advancement of Science an address of welcome was delivered by the Mayor of the town, President of the Local Committee. M. Rochard, President of the Association, delivered an address on the future of hygiene. The annual report and the annual financial statement were read—the former by M. Schlumberger, Secretary, the latter by M. Galante, Treasurer. The most important subject dealt with in the annual report was the recent fusion of the French Association for the Advancement of Science with the Scientific Association of France.

WE learn from the *Montreal Gazette* that letters to date of July 29 have been received from Dr. G. M. Dawson, who is in charge of the geological party exploring the Yukon district. The party constructed two boats on Dease Lake, and left on June 3 to descend the Dease River to its junction with the Liard. From that place Mr. McConnell left with two men to descend the Liard. The remainder of the party, with five Indians, ascended the north fork of the Liard to Lake Francis, and leaving their boats crossed a long portage of sixty miles to Pelly River near the abandoned Hudson's Bay post of Pelly banks, where they arrived on July 29, all well. From this place the Indians were sent back, and Dr. Dawson, with Mr. McEvoy and two white men, remained to construct a boat and descend the Pelly to its junction with the Yukon. The country north of Dease Lake proved somewhat varied in structure, having a granitic nucleus with Palæozoic rocks on its flanks ranging from Cambrian to Carboniferous, and overlying Tertiary beds. The old portage was found to be entirely disused, and the party had to struggle through tangled woods, often knee-deep in moss. They got over, however, with a month's supply of provisions for the advancing party, and leaving stores for the returning Indians. Being north of the latitude of 60°, they enjoyed almost perpetual daylight, and the weather was good. The country is described as possessing well-grown trees, and a great number of the ordinary eastern plants were seen in flower, with some northern and western strangers. Only the great growth of sphagnous mosses and the abundance of reindeer moss give the country a different aspect from that of British Columbia. No Indians had been seen, except those the party brought with them from the coast. Though somewhat later in the season than he had expected to be, Dr. Dawson had hopes of reaching the coast before the freezing of the rivers, and the lines of section made by Mr. McConnell and himself will give a good general idea of the structure and resources of the country.

A PAPER on "Chemical Teaching" was read before the Chemical Section of the British Association at the recent meeting at Manchester. The paper was followed by a discussion wherein it was made apparent that teachers of chemistry are very dissatisfied with the methods now in use, and are anxious for great and wide-reaching changes. A Committee was appointed by the Association to inquire into and report on the methods adopted for teaching chemistry. The Committee consists of representatives of the universities and colleges, and also of the schools and technical institutions where chemistry is taught. The Committee is to begin its work by gathering facts regarding the courses of chemical teaching given in the various institutions where chemistry forms a part of the curriculum.

DR. CLEMENS WINKLER publishes in No. 15 of the *Journal für praktische Chemie* an account of his latest work upon the new element germanium, recently discovered by him in the Freiberg mineral argyrodite. In his first announcement last year, Dr. Winkler stated that the metal was obtained by reduction of the oxide in a stream of hydrogen gas, but since that time large quantities of the mineral have been found and dealt with on a much larger scale. The powdered oxide, after undergoing an elaborate process of purification, is intimately mixed with 15 to 20 per cent. of starch-meal, made into a paste with boiling water, and rolled into balls. These balls are then placed in a crucible in contact with powdered wood charcoal and heated to redness; on cooling, each ball is found to be converted into a regulus of metallic germanium. After removal of the adhering charcoal they are placed in a second crucible, covered with a layer of powdered borax-glass and melted in a gas furnace, when they fuse together to a single brittle regulus, fine octahedral crystals being formed at the outer surface. Among the numerous compounds of germanium prepared by Dr. Winkler, two are of great importance, as conclusively indicating the position of this new element in the periodic system. The first is germanium chloroform, $GeHCl_3$, analogous to the similar well-known compounds of carbon and silicon, which is obtained by gently heating germanium in a stream of dry hydrochloric acid gas; the metal glows and continues to do so after removal of the lamp, the chloroform passing along with the excess of hydrochloric acid, and being condensed to a liquid by means of a freezing mixture of ice and salt. The second is germanium ethide, $Ge(C_2H_5)_4$, analogous to the ethides of silicon and tin, which is obtained by the action of two volumes of zinc ethide upon one volume of germanium tetrachloride. The operation is performed in an apparatus filled with carbonic acid gas, and the reaction is very violent; if, however, the temperature be kept down by immersion in cold water, the action is more regular, and after 2 or 3 hours the whole solidifies. On the addition of water, gas is evolved and a layer of the oily ethide separates out; when pure, it is colourless and of weak garlic odour, slightly lighter than water, and boils at 160°. It burns with an orange-coloured light, giving off white clouds of the oxide. There can no longer be the slightest doubt that the gap in the periodic table between silicon and tin must be occupied by germanium, for Dr. Mendelejeff predicted that the metal thus filling up this particular gap would be found to form, if discovered, a tetrethide of specific gravity about 0·96 and boiling at 160°.

WE notice, from the prospectus of the University College (London) Engineering Department, that the work of this College begins for the session on October 5. The instruction in surveying and the lectures on the various branches of civil engineering are given by Prof. L. F. Vernon Harcourt. The general lectures on engineering and machine design, as well as the work in the engineering laboratory, are in the hands of Prof. Alex. W. Kennedy. In this laboratory, the arrangements of which formed a principal subject of the paper on the use and equipment of engineering laboratories read by Prof. Kennedy before the Institute of Civil Engineers last winter, students go through for themselves, during the session, a systematically arranged course of experimental work in connexion with elasticity and the strength of materials, the efficiency and economy of steam-boilers and engines, the appliances for which have been considerably extended during the last few months. Electrical technology is under the care of Prof. Fleming, by whom (with Prof. Carey Foster) a dynamo installation has lately been fitted up for the purpose of practical experimentation in applied electricity. Building construction forms the subject of lectures by Prof. T. Roger Smith, as a part of his course on architecture. Economic geology is treated as a special subject in a short course of lectures by Prof. T. G. Bonney, and chemistry as applied to engineering and architecture in a course by Prof. Chas. Graham. In addition to these matters directly connected with engineering, the College provides ample instruction in all the sciences on which engineering is based—mathematics, mechanics, physics, chemistry, geology, &c., and very special attention is given to graphic methods of calculation as applied to scientific and technical problems in the lectures and drawing class of Prof. Karl Pearson.

We have received the Calendar of the Glasgow and West of Scotland Technical College for the ensuing session. It is proposed, we observe, to make extensive additions to "Allan Glen's School," especially by providing laboratories, rooms for freehand and mechanical drawing, and a large workshop. These will not be fully ready for use until the session of 1888-89. No change will be made in the course of study pursued since its reorganization in 1878.

The session of the Science and Technical Classes at the Royal Victoria Hall, Waterloo Bridge Road, begins on Tuesday, October 4, when a lecture on "Museums for the People" will be delivered by Prof. H. G. Seeley, F.R.S. After the lecture, prizes will be distributed, and Dr. J. A. Fleming will give an address on the importance of scientific teaching. The lecture arrangements for the remainder of the month are as follows:—October 11, Prof. Kennedy, F.R.S., "Camping out in Wyoming"; October 18, Rev. Blomfield Jackson, "Rome and its Ruins"; October 25, Prof. A. W. Rücker, "A Ship's Compass." From lectures such as these has sprung the desire for systematic teaching which has resulted in the formation of the classes. These are held in rooms at the back of the stage, a new room having been built during the summer, to prevent inconvenient crowding in some of the classes. The subjects comprise arithmetic, mathematics, animal physiology, applied mechanics, machine construction and drawing, electricity and chemistry, with the possible addition of physics and astronomy. Many of the classes are in connexion with the Science and Art Department, and the fees (1*s.* 6*d.* per class per session, with an entrance-fee of 1*s.* for new students) are suited to the working-class neighbourhood where the Hall is situated.

A course of about eighteen lectures on "Agriculture" will be delivered during the ensuing winter session at King's College, London, by Mr. Frederick James Lloyd.

In the *Bollettino* of the Italian Geographical Society for July Dr. G. A. Collini describes some important additions recently made to the Prehistoric and Ethnological Museum of Rome. These include a part of the collections made by Count Giacomo di Brazza Savorgnan and the Cavaliere Attilio Pecile during their late explorations in the Ogoway and Lower Congo basins. Although most of the objects remain in Paris, enough was secured for the Roman Museum to illustrate the arts and industries of numerous African peoples about whom next to nothing was known till quite recently. The objects are divided into two distinct categories: the first comprising the industrial and artistic products of the Fans, Adumas, Obambas, and Ondumbos of the Ogoway; the second those of the Bakongos, Bayanzi, and Batekes of the Congo, the Apfurus and Mboshi of the Alima, the Mbokos of the Likwala, and even some tribes of the lately discovered Ubanghi. Both classes contain personal ornaments, skins, fabrics woven of the raphia fibre, shields, hunting and fishing nets, musical instruments, earthenware remarkable for its correct forms, varied colours and artistic designs, besides a great diversity of iron implements and weapons such as axes, hatchets, spears, darts, hoes, knives, razors. The great skill possessed by these natives in wood-carving is shown by the spoons, domestic vessels, idols, stools, canoes, and other wooden objects included in this valuable collection.

Messrs. Marion and Co., of Soho Square, inform us that they have just introduced a set of universal 10 per cent. developing solutions for the use of photographers. The complicated constructions which accompany the majority of dry plates are made perfectly simple by them; and what is of more importance, the inconvenience of keeping different solutions for each kind of plate used is also done away with. Nothing can be simpler than their plan of first ascertaining the proportions of each constituent in the developer required, and then mixing solutions of known strengths in like proportions. The solutions are contained in three bottles, on each of which is given a list of the plates in common use and the quantity of solution required for each.

Messrs. Cassell and Co. announce a new edition of "Colour," by Prof. A. H. Church; a cheap edition of Prof. H. G. Seeley's "History of the Fresh-water Fishes of Europe," and of "Short Studies from Nature"; the completion of "Familiar Garden Flowers," by Shirley Hibberd; the third series of "Familiar Wild Birds," by W. Swaysland.

We understand that "A Quekett Club Man" is engaged upon another microscopical manual, "The Student's Hand-book to the Microscope," which will treat practically of the working of the instrument. Another well-known microscopist, Mr. T. Charters White, F.R.M.S., &c., is preparing a treatise on the mounting of objects. Both works will be published shortly by Messrs. Roper and Drowley.

We have received an interesting little pamphlet on the natural history of the coast of Lancashire by Dr. Thomas Alcock (Heywood, Manchester). The portion of the coast treated is that extending from the mouth of the Wyre nearly to the estuary of the Mersey, including Fleetwood, Blackpool, St. Anne's, Lytham, and Southport, although most attention is devoted to the latter place. The work is written in a popular style, and we can imagine no more interesting guide for visitors to Lancashire watering-places, even if their taste for natural history studies is imperfectly developed.

The September Bulletin of Miscellaneous Information, issued from the Royal Gardens, Kew, presents some facts about annatto (to which attention was called in the Bulletin for July), and a number of valuable notes on articles contributed to the Museums at Kew from the Colonial and Indian Exhibition, 1886.

The Signal Service of the United States lately ordered the abandonment of the following stations on the Pacific coast:—Monterey, San Luis Obispo, Bakersfield, Modesto, Indio, San Bernardino, Carson, Yreka, Santa Rosa, and Mendocino City. *Science* says that as soon as this order was made known the publisher of the San Francisco *Chronicle* came forward and offered to provide observers, pay for telegrams, warnings, and so forth, if the Government would allow the instruments to remain. The offer has been accepted.

We regret to announce the death of the Rev. W. S. Symonds, well known as a geologist and archæologist. He died at Cheltenham on September 15, and was buried at Pendock. He was sixty-nine years of age.

The additions to the Zoological Society's Gardens during the past week include a Pig-tailed Monkey (*Macacus nemestrinus* ♂) from Java, presented by Mr. S. P. Grieve; a Black-eared Marmoset (*Hapale penicillata*) from South-east Brazil, presented by Mr. J. J. Foster; a White-collared Mangabey (*Cercocebus collaris*) from West Africa, presented by Mr. W. Tudor; a Vulpine Phalanger (*Phalangista vulpina*) from Australia, presented by Mr. Oscar F. Armytage; a Red Fox (*Canis fulvus*) from Canada, presented by Miss Cameron; a Common Jackal (*Canis aureus*) from Ceylon, presented by Capt. W. J. Geake; a Chinese Jay Thrush (*Garrulax chinensis*) from China, a Crested Lark (*Alauda cristata*) from India, presented by Colonel Verner; a Pale-headed Tree Boa (*Epicrates angulifer*) from Bahama, presented by Mr. H. A. Blake; an Alligator Terrapin (*Chelydra serpentina*) from North America, presented by Mr. G. S. Blythe; an Aldrovandi's Skink (*Plestiodon auratus*) from North Africa, presented by Mr. Arthur Colls; a Raven (*Corvus corax*), British, deposited; two Crested Pigeons (*Ocyphaps lophotes*) bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

The Cordoba Observatory.—The sixth volume of the observations of the Cordoba Observatory, which has recently been published, is mainly occupied by the observations made the year 1875 for the great Zone Catalogue which Dr. Go brought to so successful a conclusion. In all, 38,121 stel positions were obtained in the year 1875, of which 22,315 were made in zones, the zones bearing the numbers 620 to 754. The remaining observations comprised 12,661 observations of 4373 stars for the General Catalogue, 1463 of circumpolar stars, and 1682 of stars for clock error. The individual members of certain star clusters were also observed. The volume illustrates forcibly, as do all the volumes issued by Dr. Gould, the energy, thoroughness, and system with which he carried out the great enterprise he had undertaken. Every care was taken that the observations should be as accurate, as well as numerous, as possible. For the General Catalogue stars, all four microscopes were read and the transits taken over three tallies of transit threads. For each zone, two time-stars and a circumpolar at upper and at lower transit were observed before the beginning of the zone, and the same after, together with observations of level, collimation, and nadir point. The separate determinations of the places of the stars for the General Catalogue are given, as well as their mean places in catalogue form. The tables used in the reduction of the various zones are also printed, together with corrigenda tables for the present and previous volumes, and an index to the 135 zones of this volume.

New Minor Planet.—A new minor planet, No. 269, was discovered by Herr Palisa on September 21 at Vienna. This is the sixtieth discovered by this observer.

Olbers' Comet, 1887.—The comet discovered by Mr. W. H. Brooks on August 24 is now evidently the expected comet of Olbers, 1815 I. The following ephemeris for Paris midnight is by M. Lebeuf (*Astr. Nach.*, No. 2805):—

1887.	R.A. h. m. s.	Decl. ° ′	Log *r*.	Log Δ.	Brightness.
Oct. 1	11 30 59	27 41·3 N.	0·0757	0·2731	1·71
3	41 2	27 12·4			
5	51 0	26 41·1	0·0735	0·2714	1·74
7	12 0 54	26 7·5			
9	10 42	25 31·9	0·0724	0·2709	1·75
11	20 23	24 54·2			
13	29 57	24 14·8 N.	0·0726	0·2715	1·75

The brightness on August 27 is taken as unity.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1887 OCTOBER 2–8.

(For the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on October 2

Sun rises, 6h. 4m.; souths, 11h. 49m. 23·8s.; sets, 17h. 35m.; decl. on meridian, 3° 33′ S.: Sidereal Time at Sunset, 18h. 19m.

Moon (Full October 2, 4h.) rises, 18h. 11m.; souths, 0h. 31m.*; sets, 7h. 2m.*; decl. on meridian, 3° 16′ N.

Planet	Rises. h. m.	Souths. h. m.	Sets. h. m.	Decl. on meridian ° ′
Mercury	7 35	12 47	17 59	10 4 S.
Venus	4 52	10 37	16 22	3 40 S.
Mars	1 35	8 59	16 23	15 11 N.
Jupiter	8 47	13 41	18 35	13 24 S.
Saturn	23 56*	7 45	15 34	19 22 N.

* Indicates that the rising is that of the preceding evening and the southing and setting those of the following morning.

Occultations of Stars by the Moon (visible at Greenwich).

Oct.	Star.	Mag.	Disap. h. m.	Reap. h. m.	Corresponding angles from vertex to right for inverted image. °	°
2	15 Ceti	6½	1 9	1 50	192	260
2	35 Ceti	6½	18 15	near approach	161	—
4	μ Ceti	4	19 15	near approach	161	—
6	75 Tauri	6	22 45	23 39	102	215
6	θ¹ Tauri	4½	22 54	23 8	350	325
6	θ² Tauri	4½	23 4	near approach	338	—
6	B.A.C. 1391	5	23 45	0 40†	29	295
7	Aldebaran	1	3 20	4 2	42	354
8	71 Orionis	5½	23 56	1 1†	59	237

† Occurs on the following morning.

Oct.	h.	
8	1	Mercury at greatest distance from the Sun.

Saturn, October 2.—Outer major axis of outer ring = 39″·7; outer minor axis of outer ring = 13″·0; southern surface visible.

Variable Stars.

Star.	R.A. h. m.	Decl. °		h. m	
U Cephei	0 52·3	81 16 N.	Oct.	8, 4 53	*m*
Algol	3 0·8	40 31 N.	,,	4, 0 50	*m*
			,,	6, 21 39	*m*
λ Tauri	3 54·4	12 10 N.	,,	4, 20 20	*m*
V Cancri	8 15·3	17 39 N.	,,	8,	*M*
S Cancri	8 37·5	19 26 N.	,,	7, 2 55	*m*
δ Libræ	14 54·9	8 4 S.	,,	3, 2 47	*m*
U Coronæ	15 13·6	32 4 N.	,,	6, 19 42	*m*
W Ophiuchi	16 15·3	7 26 S.	,,	7,	*M*
U Herculis	16 20·8	19 9 N.	,,	6,	*M*
U Ophiuchi	17 10·8	1 20 N.	,,	2, 21 46	*m*
		and at intervals of		20 8	
X Sagittarii	17 40·5	27 47 S.	Oct.	6, 0 0	*m*
			,,	8, 21 0	*M*
W Sagittarii	17 57·8	29 35 S.	,,	4, 23 0	*M*
R Scuti	18 41·3	5 50 S.	,,	2,	*M*
β Lyræ	18 45·9	33 14 N.	,,	4, 20 0	*M*
U Capricorni	20 41·9	15 12 S.	,,	6,	*M*
T Cephei	21 8·1	68 2 N.	,,	7,	*m*

M signifies maximum; *m* minimum.

SOCIETIES AND ACADEMIES.

LONDON.

Entomological Society, September 7.—Dr. Sharp, President, in the chair.—Mr. Arthur Sidgwick, M.A., was elected a Fellow.—Mr. Jenner-Weir exhibited a living larva of *Myrmeleon europæus*, which he had taken at Fontainebleau on August 6 last.—Mr. Elisha exhibited a series of bred specimens of *Zelleria hepariella*, Stn., and also, on behalf of Mr. C. S. Gregson, a long series of varieties of *Abraxas grossulariata*. Mr. Stainton remarked that the female of *Zelleria hepariella* had until lately been considered a distinct species, and was known as *Z. in-*